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Part IV

Architectural and Transportation Barriers Compliance Board

Technical Assistance and Research Plan for Fiscal Years 1993–1997; Focus Issues and Americans With Disabilities Act Research Agenda; Notice

ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD

Technical Assistance and Research Plan for Fiscal Years 1993–1997; Focus Issues and Americans With Disabilities Act Research Agenda

AGENCY: Architectural and Transportation Barriers Compliance Board.

SUMMARY: The Architectural and Transportation Barriers Compliance Board requests comments on focus issues and Americans with Disabilities Act research agenda for its technical assistance and research plan for fiscal years 1993–1997. The Board is particularly interested in information on related technical and research activities which are being planned or sponsored by other public and private organizations.

DATES: Comments should be received by June 26, 1992.

ADDRESSES: Comments should be sent to the Office of Technical and Information Services, Architectural and Transportation Barriers Compliance Board, 1331 F Street NW., suite 1000, Washington, DC 20004–1111.

FOR FURTHER INFORMATION CONTACT: David Capozzi, Office of Technical and Information Services, Architectural and Transportation Barriers Compliance Board, 1331 F Street NW., suite 1000, Washington, DC 20004–1111. Telephone (202) 272–5434 (Voice/TDD). This is not a toll-free number. This document is available in accessible formats (cassette tape, braille, large print, or computer disc) upon request.

SUPPLEMENTARY INFORMATION: The Architectural and Transportation Barriers Compliance Board is an independent Federal agency established pursuant to section 502 of the Rehabilitation Act of 1973, as amended, to ensure that the requirements of the Architectural Barriers Act of 1968 are met and to propose alternative solutions to architectural, transportation, communication, and attitudinal barriers faced by individuals with disabilities. The Board consists of 12 members appointed by the President from among the general public, at least six of whom are required to be individuals with disabilities, and the heads of 11 Federal agencies or their designees whose positions are Executive Level IV or above. The Federal agencies are: The Departments of Health and Human Services, Education, Transportation, Housing and Urban Development, Labor, Interior, Defense, Justice and Veterans Affairs, General Services Administration, and United States Postal Service.

Under section 502 of the Rehabilitation Act of 1973, as amended, the Board is responsible for establishing guidelines to assist four Federal agencies (the General Services Administration, the Department of Defense, the Department of Housing and Urban Development, and the United States Postal Service) in establishing accessibility standards for those federally owned, leased, or financed buildings covered by the Architectural Barriers Act of 1968. The Board's guidelines are called the Minimum Guidelines and Requirements for Accessible Design (MGRAD) and are published at 36 CFR part 1190. The standards established by the four Federal agencies are called the Uniform Federal Accessibility Standards (UFAS) and were published in the **Federal Register** on August 7, 1984 (49 FR 31528). The Board is also responsible for providing technical assistance with respect to overcoming architectural, transportation, and communication barriers to any public or private person or entity affected by regulations implementing section 504 of the Rehabilitation Act of 1973 which prohibits discrimination on the basis of disability in programs or activities receiving Federal financial assistance and in Federally conducted programs.

The Americans with Disabilities Act of 1990 (ADA) greatly expanded the Board's responsibilities. Section 504 of the ADA requires the Board to issue guidelines to assist the Department of Justice and the Department of Transportation in establishing accessibility standards for new construction and alterations in places of public accommodation and commercial facilities and for transportation facilities and vehicles covered by titles II and III of the Act. Section 504 of the ADA provides for the guidelines to supplement the existing MGRAD and to establish additional requirements, consistent with the Act, to ensure that buildings, facilities, and transportation vehicles are accessible, in terms of architecture and design, transportation, and communication, to individuals with disabilities. Section 506 of the ADA also requires the Board to provide technical assistance, in coordination with the Department of Justice and other federal agencies, with respect to the accessibility requirements of the Act.

The Board published the ADA Accessibility Guidelines for buildings and facilities in the **Federal Register** on July 26, 1991 (56 FR 35408) and amended the guidelines on September 6, 1991 to include additional requirements for transportation facilities (56 FR 45500). 36 CFR part 1191, appendix A. The Board also issued the ADA Accessibility Guidelines for transportation vehicles in the **Federal Register** on September 6, 1991 (56 FR 44530). 36 CFR part 1192. The Department of Justice has adopted the ADA Accessibility Guidelines for buildings and facilities, as published in the **Federal Register** on July 26, 1991, as the accessibility standards for new construction and alterations of places of public accommodation and commercial facilities covered by title III of the ADA. 56 FR 35544 (July 26, 1991) (28 CFR 36.406). The Department of Transportation has adopted the ADA Accessibility Guidelines for buildings and facilities and for transportation vehicles as the accessibility standards for new construction and alterations of transportation facilities by public entities covered by title II of the ADA and for transportation vehicles acquired by public and private entities covered by titles II and III of the ADA. 56 FR 45584 (September 6, 1991) (49 CFR 37.7 and 37.9).

ADA Research Agenda

In developing the ADA Accessibility Guidelines, the Board asked questions on a number of technical issues. The comments received contributed considerably to the establishment of the guidelines. However, the comments revealed several areas where existing information was insufficient to allow the Board to set specific requirements. In addition, some of the technical provisions of the Board's ADA Accessibility Guidelines are based on research conducted in the middle 1970's which supported the development of the ANSI A117.1–1980 and 1986 standards on which the guidelines are based. In order to gather new information and to update the research that exists, the Board has identified a list of areas where further research and study is needed before it can develop new or additional requirements.

In previous years, the Board has directed approximately $200,000 to $250,000 of its appropriated funds to conduct technical assistance and research projects. In light of the issues identified through ADA rulemaking which require further research and study, the Board has requested approximately $500,000 for such projects in fiscal year 1993.

The Board is particularly interested in information on related technical and research activities which are being planned or sponsored by other public and private organizations, including published and unpublished studies on

any of the issues identified. Comments may include suggestions for prioritizing issues for research and may identify additional issues relating to MGRAD and the ADA Accessibility Guidelines that are in need of further study. The proposed research agenda listed below is not in any order of priority. Items are numbered simply to facilitate public comment.

(1) Medical Facilities' Examination Equipment

• Evaluate permanently installed medical facilities' examination equipment and make recommendations for accessibility guidelines. Develop technical assistance materials based on findings.

(2) Windows

• Gather and analyze existing product information and technical specifications for windows, and make recommendations for accessibility guidelines.

(3) Signage and Orientation Information for Persons Who Are Visually Impaired or Blind

• Examine and make recommendations for making signs that provide information about functional spaces, hazards, or rules of conduct accessible to persons who are blind, including analysis of existing technology such as audible signage for making overhead and remote signage in buildings and facilities accessible.

• Conduct research and make recommendations on how transportation route and schedule information can be made accessible to persons who are visually impaired or blind.

• Evaluate readability and visibility of electronic and LED signs for persons with low vision and make recommendations regarding their use on moving vehicle "head signs".

• Examine the interrelationship of viewing distances and character height and its effect on readability for persons with low vision and make recommendations for revising accessibility guidelines.

(4) Engraved Signage

• Determine what cognitive, perceptual, and maintenance factors impact the readability of engraved signage by persons who are blind or visually impaired.

• Make recommendations for technical specifications for engraved signage, including width, height, and depth of engraving, to ensure readability by persons who are blind or visually impaired.

(5) Special Provisions for Alterations to Buildings and Facilities

• Evaluate and make recommendations for special alterations provisions relating to:

(a) Ramp slope;
(b) Elevator car dimensions; and
(c) Areas of rescue assistance.

(6) Space and Reach Range Requirements for Persons Using Power Wheelchairs and Three-Wheeled Scooters

• Conduct research and make recommendations for technical specifications for clear floor, turning, and maneuvering spaces, and reach ranges for persons using power wheelchairs and three-wheeled scooters.

• Study whether additional specifications for interior circulation in transportation vehicles are needed. Specifically address space limitations at fare boxes in buses and light rail vehicles.

(7) Protruding Objects

• Assess existing technical specifications for protruding objects and make recommendations for revising them.

(8) Detectable Warnings, Handrail Extensions, and Tread Markings for Persons with Visual Impairments

• Examine and make recommendations for technical specifications for detectable warnings at doors to hazardous areas and stairs, including handrail extensions and tread markings, for persons who are blind or visually impaired.

• Evaluate the effects of color and contrast on detectable warning surfaces for persons with low vision, and examine techniques and tools for accurate measurement of contrast under field conditions.

(9) Diagonal and Circular Stairs

• Assess and make recommendations to address orientation and wayfinding problems caused by diagonal and circular stairs for persons who are blind.

(10) Bathing Facility Accessibility

• Conduct research and make recommendations for technical specifications for vertical grab bars in bathtubs and shower areas.

• Analyze existing information and products, and make recommendations for technical specifications for slip resistant shower seats.

• Review and evaluate current standards and existing testing methods for slip resistance in shower stalls and assess such factors as drain location and floor slope. Make recommendations for technical specifications.

• Conduct research and make recommendations for technical specifications for shower head mounting height.

(11) Under Table and Fixed Seating Depth Requirements

• Conduct research and analyze existing technical specifications for knee and toe clearances under tables and make recommendations to ensure that, as appropriate, such provisions accommodate guide dogs. Also make recommendations for space under seats on intercity and commuter rail cars.

(12) Automated Teller Machines (ATMs) and Point of Sale Machines

• Conduct research and make recommendations regarding existing technology for providing Braille printouts of ATM transactions.

• Investigate technology and industry capabilities and make recommendations for specific requirements for contrast, color, and point size for ATM screens to make these readable by persons who have low vision.

• Evaluate existing technical specifications for ATMs and make recommendations regarding whether equipment vandalism and privacy should be addressed.

• Conduct research and make recommendations for making point-of-sale machines accessible.

(13) Homeless Shelters

• Conduct research regarding the need for and impact of accessibility guidelines for transient lodging on homeless shelters and make recommendations for revising guidelines.

(14) Chemical and Environmental Sensitivities

• Identify architectural and design features of buildings and facilities which affect access by persons with chemical and environmental sensitivities.

• Assess activities of other government agencies and standard setting organizations to address needs of persons with chemical and environmental sensitivities.

(15) Ramp Slope

• Evaluate the adequacy of the 1:12 maximum slope.

(16) Swimming Pools

• Analyze and evaluate methods for providing access to swimming pools and make recommendations for various types of pools.

(17) Health Club Equipment

• Survey and evaluate existing methods for providing access to health club equipment and develop technical assistance materials.

(18) Standardization of Audible Alarms

• Conduct a follow-up study on the Auditory Alarms Project to develop specific recommendations for standardization of audible alarms.

(19) Public Information for Persons with Hearing Impairments

• Determine which type of assistive listening system is most effective in certain environments and prepare technical assistance materials.

• Survey and research new technologies for visual display systems and make recommendations for accessibility guidelines.

• Conduct research and gather data on the methods and technologies that are available for making public announcements in transportation facilities and vehicles accessible to persons with hearing impairments. Review results of Department of Transportation study on the effectiveness of external speakers.

(20) Transportation Facilities: Signage Along Circulation Paths and Station Identification Signs

• Gather and analyze information on uniform locations for signage and providing directional signage for persons with visual impairments in transportation facilities, and make recommendations for accessibility guidelines.

• Conduct research and make recommendations on audible signs for use in station identification.

(21) Airports: Security Systems

• Examine and make recommendations for technical specifications for permanently installed security systems at airports, including providing an accessible route through such systems.

(22) Boats and Ferries

• Gather and evaluate information on accessible features for boat and ferry docks and make recommendations for technical specifications for boarding devices, including requirements for the slope and slip resistance of gangplanks. Study and address certain environmental factors, including the effect of tidal changes on gangplank slopes and the effects of salt and water corrosion on elevators.

• Gather additional information regarding securement devices, provision of an accessible route over gunwales, requirements for elevators, and design considerations and cost impact of applying accessible lodging requirements to cruise ships.

(23) Vehicle Ramps

• Gather information and conduct a study on whether the minimum two-inch height side barrier specified for vehicle ramps is adequate and whether this height should vary based on ramp length.

• Conduct research regarding the need for handrails on long vehicle ramps or bridge plates and make recommendations concerning at what length a ramp should be considered a bridge plate and exempt from a handrail requirement.

(24) Steps on Buses, Light Rail, Commuter Rail, and Intercity Rail Cars

• Study the cost and design feasibility of various dimensions for steps on buses, and other transportation vehicles.

(25) Vehicle Doors: All Vehicle Modes

• Conduct research on the factors influencing vehicle door closing force and speed and make recommendations for technical specifications.

(26) Interior Lighting on Buses

• Conduct research and gather information on interior lighting levels on buses to determine whether the existing requirements are adequate.

(27) Intercity Rail Car Restrooms and Sleeping Rooms

• Study the feasibility and cost of providing larger restrooms with wider doors on intercity rail cars. Gather information on power sliding doors and make recommendations for technical specifications.

• Conduct research on whether additional technical specifications are needed for accessible sleeping rooms on intercity rail cars, including maneuvering space.

(28) Lifts: Vehicle Interlock on Commuter and Intercity Trains

• Study the feasibility and cost of providing an interlock system that will prevent movement of commuter and intercity trains when lifts are in use.

(29) Electric Cart Accessibility

• Evaluate methods and costs of providing access to electric or other powered carts for wheelchair users in airports and parks.

(30) Floor Surfaces: Carpet Weave

• Research the effects of carpet weave on maneuverability for wheelchair users and wayfinding for persons who are blind.

(31) Pedestrian Overpasses

• Gather and evaluate information on accessible pedestrian overpasses.

Focus Issues

In addition to the ADA related research issues, the Board has an on-going technical assistance and research program which includes the periodic review and updating of its guidelines to ensure that they remain consistent with technological advances, research findings, changes in model codes and standards, and continue to meet the needs of persons with disabilities. Beginning in fiscal year 1988, the Board adopted a five year plan of focus issues to guide it in selecting technical assistance and research projects aimed at improving architectural, transportation, and communication accessibility. In recent years the Board focused on accessible and adaptable housing in fiscal year 1989, and transportation in fiscal years 1991 and 1992. In fiscal year 1993, the Board will undertake a new five year plan that focuses on the following issues:

Fiscal year	Focus issue
1993	Universal Design—Projects will address the design of buildings and facilities throughout the lives of the people using them.
1994	Urban Centers/Urban Planning Accessibility issues—Projects will involve the integration of architectural, transportation, communication, and housing accessibility features into urban built environments.
1995	Rural/Suburban Accessibility Issues—Projects will address the integration of accessibility issues such as housing, transportation, communication, and recreation in suburban and rural environments.
1996	Review of State Accessibility Codes, and Accessible Transportation and Communication Systems—Projects will review the ADA Accessibility Guidelines after they have been in place for five years.
1997	Accessibility State to State: An Information Sharing Conference—Projects will support accessibility information sharing conference among States on a variety of issues relating to the ADA Accessibility Guidelines.

These focus issues will help the Board in selecting research projects. The Board requests comments from the public regarding the appropriateness of these focus issues and specifically invites suggestions for the fiscal year 1993 focus issue relating to the concept of universal design. The Board is especially interested in comments that suggest priorities for research projects that will

be consistent with the concept of universal design given the research budget for this year.

As explained in the Encyclopedia of Architecture, the concept of universal design is relatively simple.

> Improved design standards, better information, new products, and lower costs have made it possible for design professionals to begin designing all buildings, interiors and products to be usable by everyone. Instead of responding only to the minimum demands of laws which require a few special features for disabled people, it is possible to design most manufactured items and building elements to be usable by a broader range of human beings including children, elderly people, people with disabilities, and people of different sizes. This concept is called universal design. It is a concept that is now entirely possible and one that makes economic and social sense. 3 Encyclopedia of Architecture, Design, Engineering and Construction 754 (1989).

Buildings which accommodate all people through their life span can be achieved through the application of universal design principles in all phases of the environmental design process including programming, conceptual design, plan development, product specification, and design documentation. Building programs should incorporate information about the variety of building users and their abilities. People with disabilities and older people can be expected to be among employees, customers, and visitors to a facility.

This knowledge, along with information about the functional limitations of these populations, can guide designers in making important decisions about building access in conceptual design and plan development stages, and in integrating universal design features in a sensitive manner. For example, accessible entrances are needed by the 10% of the adult population that has difficulty with stairs, but they also benefit virtually everyone. While an entrance to a building can be made accessible in many ways, some are more consistent with the building form than others. Access standards permit ramps, lifts, or walks which meet the 4G specifications set out in the standards. Ramps, which are perhaps most commonly used, are not ideal for many people, and lifts may malfunction, leaving many people with disabilities unable to enter or exit. In most situations, proper sitting and adjustment of footings can produce level entrances. When site or design constraints conflict, level entrances can be provided through the creative use of bridges to high ground, overhead walks, or exterior elevator towers which can be shared by more than one building.

From the perspective of cost and efficiency, universal design has many advantages:

- The elimination of the need to make future structural modifications to accommodate the changing needs of people as they age.
- The elimination of special, duplicative, and more costly elements to accommodate the needs of people with disabilities. For example, if a building is sited and designed properly to allow for an entry at grade level, it is not necessary to construct a ramp; and the use of appropriate available lavatories and hardware eliminates the use of more costly "handicapped" lavatory and hospital hardware commonly used.
- The building will more efficiently serve the needs of all users. For example, when eliminating separate "handicapped" entrances through the design of one serving the needs of all users, the need to duplicate supporting elements and services such as providing two sets of informational and directional signage and security service is eliminated.

While the concept is relatively simple, integration of the concept of universal design into the practice of architecture and design, and into the construction of buildings and facilities and vehicles, is much more complex and difficult. It involves changing the way people think about design. It involves changing model building codes and accessibility standards and it involves mainstreaming the concept of designing for everyone.

Dated: May 5, 1992.

For the Architectural and Transportation Barriers Compliance Board.

Gordon H. Mansfield,

Chair of the Board.

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